EDITORIAL

The NSW "State of the Environment 2000" report: a rallying call for zoologists

In his book Birds, Beasts and Men: A Humanist History of Zoology, Hays (1972) begins with the rather bald statement that "The study of zoology really needs no justification." Despite this comment, he enlarges on his theme by saying: "…today, when we are reappraising our position in nature, when we are being forced to decide what we wish to make of this world we live in before it is too late, there seems to be a wave of almost nostalgic interest in the creatures with whom we share it".

Drawing on Hays' theme, this edition of Australian Zoologist publishes some insights into our world by presenting examples of research on Australian creatures. Pyke and White share their knowledge of and nostalgia for the Green and Golden Bell Frog Litoria aurea down to the last detail of its zoological life and, in doing so, leave us puzzled as to why this common and widespread species suddenly slid into the NSW endangered species list. Contrast this with Lemckert's study into the calling behaviour of another frog that remains a common and successful species. Reinhold and her 11 co-authors treat us to the geographic variation in the echolocation calls of Gould's Wattled Bat Chalinolobus gouldii, a study made possible only with the invention of a specialized sound recording system and the recent growth of a network of eager bat workers across the nation. This new technology which enables more detailed research on bats has been developed just in time to take advantage of the burgeoning willingness to survey fauna ahead of, rather than after, development. In this edition, a geographical spread of research is represented in papers on Crowned Snakes found on islands off southwestern Australia, on Platypus in Tasmania and on hybrid kangaroos in western NSW. Regrettably, invertebrates are not enjoying the same wave of interest despite the major plug they received in The Other 99%, the Society's 460-page book on the subject (Ponder and Lunney 1999). The pages of Australian Zoologist remain open to invertebrate zoology and we welcome submissions on this important group of subjects. To aid this cause, an editorial board (including invertebrate workers Pat Hutchings and Dieter Hochuli) was recently established specifically to expand the taxonomic range of material submitted to Australian Zoologist.

The final chapter of Hays' book Birds, Beasts and Men (1972) opens with an odd quotation: "There is no risk in making the flat statement that in a world devoid of other living creatures, man himself would die. This fact – call it a theory if you will – is far more provable than the accepted theory of relativity. Involved in it is, in truth, another kind if [sic] principle of relativity – the relatedness of all living things". Hays continues: "So wrote Fairfield Osborn, director of the New York Zoological Society, in 1948. This is one of the earliest serious warnings issued to the human race, warnings which have become ever more imperative. Osborn was writing of ecology … Now ecology has assumed a wider meaning. The crisis [is] belatedly recognised as worldwide… Man is forced to survey his role in ecological change".

What is remarkable is the rapid shift from an early warning in 1948 to the recognition of a crisis by 1972, and the primary role of one new biological discipline – ecology – to produce this insight.

In 1968, the now silvered-haired senior editor of Australian Zoologist was a final year zoology student at the University of Sydney. The student handbook of that year reported that there were no job prospects in zoology other than research or teaching. Fortunately, Charles Birch had other ideas which inspired those about to graduate to take a risk and find employment in what has now become a well-populated career of environmental management. Similarly, Harry Recher with his strong, assertive American accent, introduced a new style of lecturer who carried Carson's (1962) now-classic Silent Spring in his pocket and the message of Paul Erhlich's (1968) The Population Bomb on his mind. At the same time, Gordon Grigg arrived as a post-doctoral fellow selling $1 stickers to help stop limestone mining of the Barrier Reef. It was the first such direct action any of our class had seen. Even the dollar was a novel item, having displaced the pound only two years earlier. Grigg's environmental concerns later found expression in matters to do with land degradation, and he has promoted the value of harvesting kangaroos as sheep replacement therapy for the rangelands. Our younger co-editor, Brad Law, remembers that as a first-year zoology student in 1983, he had been privileged to hear Charles Birch's final lecture before his retirement.

Each of these zoologists has made a remarkably original contribution by combining his enthusiasm for the subject with a willingness to communicate his findings and to share his ecological insights. Each had recognised that there was an environmental crisis before the thought was widely accepted. It is that personal insight, that application of a zoological education to its significance in the world around you, that is so electrifying. Long ago, that insight influenced that final-year student to seek a job in a discipline that had yet to find a name, and it has remained a hallmark of each of these zoologists throughout their long careers as researchers, writers and teachers.

The point here is not so much to congratulate them but to give some substance to Hays' remark that there is no need to justify being a zoologist. In the long history of zoology and closely-related disciplines such as botany, there have been many earth-shaking insights which continue to inspire new generations of zoology graduates. This year's annual scientific meeting of the Australian Mammal Society in Brisbane was, for example, well attended by post-grad students and others seeking careers in a zoological discipline. One of the aims of Australian Zoologist, as the flagship for the Royal Zoological Society of NSW, is to promote zoology as an exciting and life-changing subject to its practitioners and others interested in the subject. However, we have noticed, as editors, that despite the intellectual attractions of the discipline, there are hurdles which many zoologists seem reluctant to cross. Many researchers are slow to communicate their findings through the rigorous process of refereed publication. There appears to be too little incentive to publish. There also appears to be a hierarchy of subjects and genres, with some rejected by certain referees and journals. Zoological surveys, ecological history and opinion pieces are often refused by some publications. Not so in Australian Zoologist, where we welcome submissions along these lines and encourage our contributors to comment freely on their subject. Where other journals prefer papers of standard length, the Australian Zoologist is willing to accept longer submissions, such as those of Pyke and White and the remarkable ecological history by Short and Calaby, with its insights into the role of the fox in the Australian landscape, and shorter papers such as those by Ellis on a bat and by Rowland on a fish.

In his voluminous 896-page Natural History, the director of the British Museum (Natural History) Charles Tate Regan (1936) had assembled what its preface, written by the publishers, called a detailed and comprehensive survey of the Animal Kingdom. The opening paragraph of the preface notes: "Yet there has never been a time when it was of greater importance that such knowledge should be both easily accessible and widely used". We agree, but we do not know precisely what the director meant. No doubt the current director of the Australian Museum, Michael Archer, would also agree with Regan, but his explanation of the sentence would have a very contemporary ring not readily comprehensible to Regan. Of one thing we can be sure; Archer would have something pertinent to say about the closing paragraph of Regan's Introduction: "The writer's views on evolution are that it has always been adaptive, related to habits and conditions of life. Some species are sufficiently well known to enable it to be said where, and when, and even why they have evolved; but the question 'how?' still remains to be answered, and no attempt to answer it need be made here. Whether the theory of Lamarck, generally termed 'the inheritance of acquired characters,' or the Natural Selection theory of Darwin, offers the most satisfactory explanation, and whether any of the more modern hypotheses come nearer the truth, are controversial matters that need a separate book for their discussion. South Kensington 1936. C. Tate Regan".

Ron Strahan, the most senior member of the editorial board of Australian Zoologist, was cutting his zoological teeth as Regan's tome was published. The debate influenced the young Strahan, and his monumental The Mammals of Australia (1995), the single most-cited text in Australian mammalogy, bears testimony to this catalogue-based educational approach. Strahan's enthusiam for the evolutionary debate and his championing of Darwin is a legacy of that period.

In the Mammalia contribution in Natural History (Pocock 1936), one readily turns to the marsupialia because of its Australian content. In the paragraph on the 'Tasmanian Wolf Thylacinus cynocephalus', Pocock writes: "Although very rare, it is still found in hilly, timbered country, where it hunts at night for birds and small mammals, including wallabies, which it catches by persistent tracking. In the settled districts it has been killed out, owing to its depredations on farmers' livestock." We now know that 1936 was the year it went extinct, the same date as the publication of Pocock's paper. Turning now to the bandicoots, specifically the Pig-footed Bandicoot, identified by Pocock as Choeropus castanotis, the text states: "It inhabits the grassy plains of the greater part of Australia". Johnson and Burbidge (1995) state that the last reliably dated museum specimen of the Chaeropus ecaudatus [the same species] was taken in 1901, but Aboriginal testimony indicates that it disappeared from South Australia between 1910 and 1920 although the Pintupi people in the central deserts of Western Australia recall it surviving there until as recently as the 1950s. In relation to the Koala Phascolarctos cinereus, Pocock states: "The scarcity of this animal is due to persecution by the fur trade, and decimation by epidemics". The national koala conservation strategy (ANZECC 1998), by contrast, states that: "Loss of habitat is the major threat to the koala and is the main factor responsible for its declining populations". This is not to say that the fur trade was not a threat in the early days, but the threat most overlooked until relatively recently has been habitat loss. Furthermore, threats can change over time, and public perception of the funda-mental threats may lag considerably behind the reality. From these three marsupial examples, we can see that the new discipline of ecology had yet to enter the doors of the British Museum in 1936, and the discipline of zoology was little more than a descriptive catalogue. It was certainly not an effective register of population change, species status, and at that time did not provide the stimulus for conservation action. We remain deeply indebted to the authors of catalogues, but emphasise that new ideas must always inform the discipline. It is surveys of fauna that bring us up to date on status and it is regular censuses that keep track of population changes, but it is ideas that propel a discipline towards a new understanding of the world around us and the fellow creatures which inhabit it alongside us. Research funds that reward innovative thinking as well as rigour in experimental design and data collection should be encouraged.

New ideas about modern extinctions and their causes were in print 100 years ago. In his book Mostly Mammals, Lydekker (1903) starts the first paragraph of his first chapter with the heading: "Animals exterminated during the nineteenth century". The text then continues: "While the century which has lately closed may fairly lay claim to the gratitude of posterity on account of the magnificent tale of zoological work accomplished during its course, it is, on the other hand, undoubtedly open to the charge of having permitted the total extermination of not a few animals, and of having allowed the numbers of others to be so reduced that their disappearance, at least as truly wild creatures, can scarcely be delayed very many years longer." This writing is modern in its view, its tone sounds like current media items, and it is ecological in its numerical appreciation of the problem. Lydekker, it seems, would not have been surprised to learn that 24 native mammals species became extinct in the Western Division of NSW between first settlement in 1841 and the Royal Commission of 1901 into the Western Lands (Lunney 2001). In NSW it was not zoologists who recognised the problems and pushed governments to make policy changes, but those interested in conserving landscapes and natural areas in national parks and nature reserves. The value of protected areas, such as national parks, is recognised in the SoE Report 2000 (EPA 2000) as an effective way of conserving biodiversity, yet it is the opinion of one of us that too few scientists properly value the reserve system and the ethic upon which it is based (Lunney 1998).

The most modern and startling catalogue is the NSW State of the Environment Report 2000 (EPA 2000). In the introduction to the chapter on biodiversity, the following stark statement appears: "It is clear that human activities have a major impact on terrestrial and aquatic ecosystems. Despite recent efforts to alleviate these pressures, biodiversity is still being lost in NSW. There is a paucity of information about certain taxa (including invertebrates and microorganisms) and some ecosystem types that are being lost and degraded before they are described or understood. Protecting biodiversity is becoming recognised as a priority for both communities and authorities, not only in NSW, but around the world". We can be pretty sure that Lydekker would agree with this comment once a couple of the new terms, such as biodiversity and ecosystem, were explained to him, and we can be certain that some of our fellow zoologists would say that this was an understatement of the matter. Hays’ sense of crisis back in 1972 is not to be found in this Report, but it can be found in Recher (1999), which was cited by the SoE Report. The value of the Report lies in what Debus, as Minister for the Environment, identified in its foreword: “SoE 2000 provides important information to the community on the condition of our environment and how effective are our efforts to protect and enhance it … Managing and protecting our environment for current and future generations presents a serious challenge”. We agree, and the pages of Australian Zoologist and the forums and books of the Royal Zoological Society of NSW endeavour to fill the gaps where there is a paucity of information, to comment on the effectiveness of zoological and ecological efforts and to make informed and innovative suggestions for managing the environment.

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